

## Hingtgen, Robert J

---

**From:** Howard Cook <howwcook@yahoo.com>  
**Sent:** Thursday, February 13, 2014 12:47 PM  
**To:** Bennett, Jim  
**Cc:** Hingtgen, Robert J; Donna Tisdale; Mark Ostrander; Jacob, Dianne  
**Subject:** Fw: Soitec PEIR - Additional Information on Construction Water  
**Attachments:** Construction Water Demand AECOM 7-9-13 REVISED\_RUGGED\_FOR COUNTY.pdf;  
Construction Water Demand AECOM 7-9-13 REVISED\_TDS\_FOR COUNTY.pdf

Jim and Robert,

On Wednesday, February 12, 2014 4:05 PM, "Bennett, Jim" <[Jim.Bennett@sdcounty.ca.gov](mailto:Jim.Bennett@sdcounty.ca.gov)> wrote:  
**Good Afternoon Mr. Cook,**

The attached information is being provided per our discussion we had at the Boulevard Planning Group meeting last Thursday night regarding the construction water demand assumptions for the Rugged and Boulevard project sites. The two attached documents provide backup detail to the numbers that were included in the PEIR. These water demand estimates were prepared by AECOM, a consultant hired by Soitec. The Department of Planning & Development Services will provide responses to your comments including those you provided me last Thursday after the public review period has ended.

Thank you,

Jim Bennett, P.G. #7707, CHG#854  
Groundwater Geologist

**County of San Diego**  
Planning & Development Services  
5510 Overland Avenue, Suite 110, San Diego, CA 92123  
Phone: 858-694-3820 Fax: 858-694-3373

Thank you for following through and sending me the consultant construction water work sheets.

They truly point out why the county should hire a truly independent engineering firm (not associated with Soitec) to find out the true comprehensive construction water costs. Why should we the residents pay for such an analysis? DPLU may have the expertise in house to do this, but it will take time and money? After all our aquifers and citizens ability to live here are at stake.

A few comments on the consultant work sheets - AECOM used the same standard ground moisture levels used at ECO, but if you read page two of the SDG&E 10-01-13 change order you see all the reasons why the consultants and engineering firms were over 300% wrong. There must be a "lessons learned analysis" of these actual construction experiences, with electrical and gen-tie construction water use. Some other brief comments on the missing water estimate items, which the county or someone needs to respond on:

- Roads - There will be miles of roads inside these project sites, road building with culvert and drainage construction, very water intensive, how many miles of roads, number of culverts and drainage items are there? Must be analyzed and translated to gallonage estimates. Also non road treatment with material laid down adjacent and around the trackers and how many acres of this and gallonage estimate?
- Underground electric - how many feet and how many gallons to construct? what was experience at ECO and Boulevard?
- Substation Construction at each site. - What was experience at ECO and Boulevard?
- Operations and Maintenance buildings - How many square feet and water estimate needed?
- Fencing - How many miles of fencing and gate and entrance areas are planned? and what is water estimate?
- Ten Acre Cement and rock crushing plant at Rugged - How many units of cement will be produced and water needs? Water washing of equipment and trucks is a big water item, how many trucks visits and washings etc. and gallonage estimates for each.
- 14 acre cement and rock crushing plant for Tule and Soitec Joint Tie line uses.
- Tie Lines between all sites - How many miles? What is the gallonage estimate per mile? use ECO/ Boulevard experience?

Please let myself and Donna Tisdale and myself know how and to what extent you will analyze these and other construction water estimate items? Please also include this E-mail in your administrative record.

Thanks again for your prompt reply to previous questions raised

Howard W Cook



## Estimation Sheet

**Project**

Rugged Solar

**Subject**

Construction Water Demand

**Methodology**

From the initial geotechnical investigation of the site, the difference between optimal moisture content and lowest observed value at the site and then multiplying through by dry unit weight determined through the proctor test yield roughly 8.38pcf.

**Estimated Water Use During Clearing, Grubbing and Grinding**

Empirical Rate of Water Used for clearing, grubbing, grinding and dust control (Based 42.1 acre site located near Boulevard, CA)	24,204 GAL/ACRE
Input Total Disturbance (Minus 20% that is low lying grass and already cleared from Sunrise Powerlink). 575 Acres X .20 = 460 acres	460 ACRE
<b>Total water to clear, grub and grind 460 acres</b>	<b>11,133,840 GAL</b>
Conversion to gallons per acre-foot	325,851
<b>Total water to clear, grub and grind 460 acres</b>	<b>34 ACRE-FT</b>
<b>Total water to clear, grub and grind 460 acres</b>	
Input expected duration to clear, grub and grind	40 DAY
<b>Water demand to clear, grub and grind</b>	<b>0.85 ACRE-FT/DAY</b>
<b>Water demand to clear, grub and grind</b>	<b>278,346 GAL/DAY</b>

**Estimated Mass grading**

Input quantity of on-site fill used to balance site	29,835 CY
Input optimum moisture content	9 %
Input observed moisture content	2.5 %
Input dry unit weight of on-site fill	129 PCF
Weight of water to reach saturation	8.385 PCF
Water required to hydrate and gain compaction	30 GAL/CY
Input contingency to account for evaporation during summer months	1.667
Water required to hydrate and gain compaction	50 GAL/CY
<b>Water for grading</b>	<b>1,505,012 GAL</b>
Conversion to gallons per acre-foot	325,851
<b>Water required for grading</b>	<b>5 ACRE-FT</b>
Input quantity of Scrapers (CAT 627H @ 24 cubic yards per load)	3 EA
Volume per haul	24 CY/EA
Time per haul	10 MIN
Hauls per hour	18 EA/HR
Grading Rate	432 CY/HR
Grading Rate for each work day	3,456 CY/DAY
Time to complete grading (work days)	9 DAYS
<b>Water demand to complete mass grading</b>	<b>0.54 ACRE-FT/DAY</b>
<b>Water demand to complete mass grading</b>	<b>174,336 GAL/DAY</b>

**Estimated Water Use for Concrete**

Quantity of concrete per tracker foundation	2.5 CY
Rate at which trackers are installed	40 EA/DAY
Quantity of concrete placed per day	100 CY/DAY
Percent of water in concrete	20 %
Conversion to gal/cubic yard	202 GAL/CY
Rate for placing concrete	4,040 GAL/DAY
Time to complete tracker foundations	90 DAY
<b>Total water use for concrete</b>	<b>363,600 GAL</b>

**Estimated Water Use for Wind Days**

Based on 300 construction days out of 365 day calendar year	18 Wind Days
Dust supression water deamnd on wind days	54,000 GAL/DAY
<b>Total water use for wind days</b>	<b>972,000 GAL</b>

**Daily Dust Control**

Based on 300 construction days	300 Days
	18,000 GAL/DAY
<b>Total Water Use for Daily Dust Control</b>	<b>5,400,000 GAL</b>

**Total Estimated Construction Demand**

<b>Total Water Days 1-40</b>	<b>452,682</b>	<b>GAL Per DAY</b>
<b>Total Water Days 41-50</b>	<b>174,336</b>	<b>GAL Per DAY</b>
<b>Total Project Water Usage</b>	<b>19,374,452</b>	<b>Gallons</b>
	<b>59.46</b>	<b>ACRE-FT</b>



## Estimation Sheet

**Project**

Tierra Del Sol Solar Farm

**Subject**

Construction Water Demand

**Methodology**

From the initial geotechnical investigation of the site, the difference between optimal moisture content and lowest observed value at the site and then multiplying through by dry unit weight determined through the proctor test yield roughly 8.38pcf.

**Estimated Water Use During Clearing, Grubbing and Grinding**

Empirical Rate of Water Used for clearing, grubbing, grinding and dust control (Based 42.1 acre site located near Boulevard, CA)	24,204 GAL/ACRE
Input Total Disturbance	420 ACRE
<b>Total water to clear, grub and grind 420 acres</b>	<b>10,165,680 GAL</b>
Conversion to gallons per acre-foot	325,851
<b>Total water to clear, grub and grind 420 acres</b>	<b>31 ACRE-FT</b>

**Total water to clear, grub and grind 420 acres**

Input expected duration to clear, grub and grind	40 DAY
<b>Water demand to clear, grub and grind</b>	<b>0.78 ACRE-FT/DAY</b>
<b>Water demand to clear, grub and grind</b>	<b>254,142 GAL/DAY</b>

**Estimated Mass grading**

Input quantity of on-site fill used to balance site	9,429 CY
Input optimum moisture content	9 %
Input observed moisture content	2.5 %
Input dry unit weight of on-site fill	129 PCF
Weight of water to reach saturation	8.385 PCF
Water required to hydrate and gain compaction	30 GAL/CY
Input contingency to account for evaporation during summer months	1.667
Water required to hydrate and gain compaction	50 GAL/CY
<b>Water for grading</b>	<b>475,641 GAL</b>
Conversion to gallons per acre-foot	325,851
<b>Water required for grading</b>	<b>1.5 ACRE-FT</b>

Input quantity of Scrapers (CAT 627H @ 24 cubic yards per load)	1 EA
Volume per haul	24 CY/EA
Time per haul	10 MIN
Hauls per hour	6 EA/HR
Grading Rate	144 CY/HR
Grading Rate for each work day	1,152 CY/DAY
Time to complete grading (work days)	8 DAYS
<b>Water demand to complete mass grading</b>	<b>0.18 ACRE-FT/DAY</b>
<b>Water demand to complete mass grading</b>	<b>58,112 GAL/DAY</b>

**Estimated Water Use for Concrete**

Quantity of concrete per tracker foundation	2.5 CY
Rate at which trackers are installed	40 EA/DAY
Quantity of concrete placed per day	100 CY/DAY
Percent of water in concrete	20 %
Conversion to gal/cubic yard	202 GAL/CY
Rate for placing concrete	4,040 GAL/DAY
Time to complete tracker foundations	63 DAY
<b>Total water use for concrete</b>	<b>254,520 GAL</b>

**Estimated Water Use for Wind Days**

Based on 249 construction days out of 365 day calendar year	15 Wind Days
Dust suppression water demand on wind days	54,000 GAL/DAY
<b>Total water use for wind days</b>	<b>810,000 GAL</b>

**Daily Dust Control**

Based on 249 construction days	249 Days
	<b>18,000 GAL/DAY</b>
<b>Total Water Use for Daily Dust Control</b>	<b>4,482,000</b>

**Total Estimated Construction Demand**

<b>Total Water Days 1-40</b>	<b>272,142</b>	<b>GAL Per DAY</b>
<b>Total Water Days 41-49</b>	<b>76,112</b>	<b>GAL Per DAY</b>
<b>Total Project Water Usage</b>	<b>16,187,841</b>	<b>Gallons</b>
	<b>50</b>	<b>ACRE-FT</b>